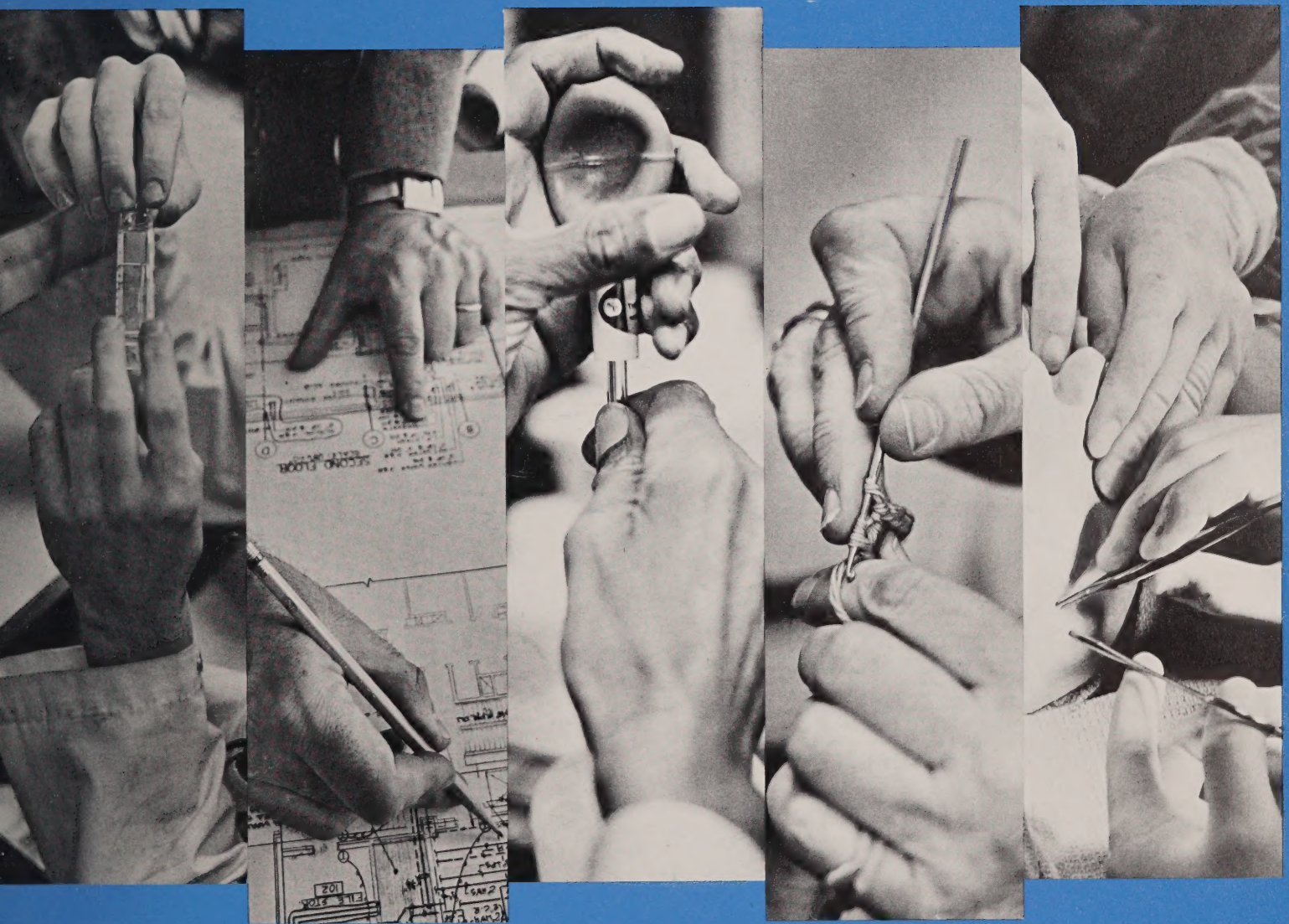
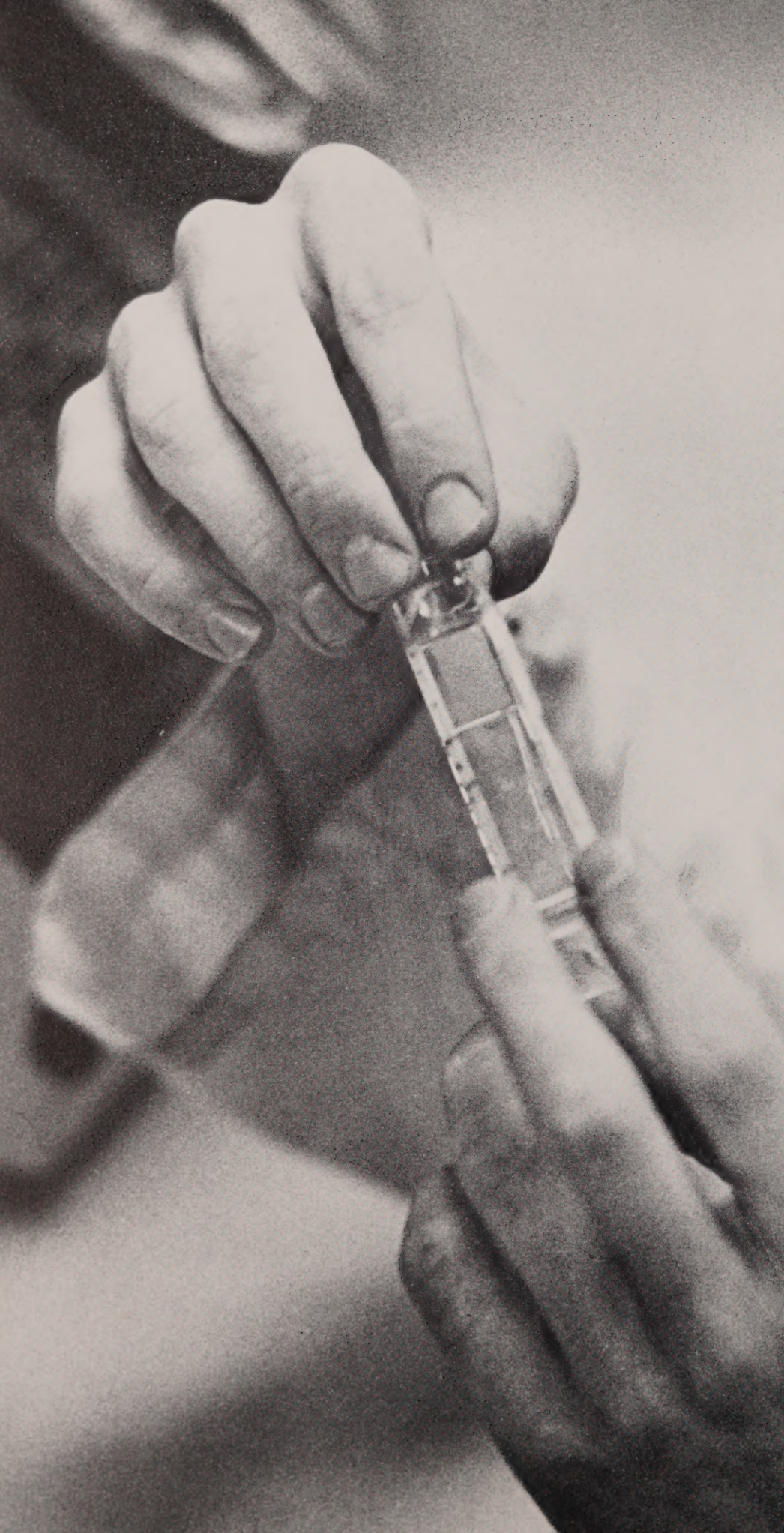
New England Deaconess Hospital Annual Report 1980





The New England Deaconess Hospital
A Harvard Medical School Teaching Hospital

affiliated with
Joslin Clinic
Lahey Clinic
Overholt Thoracic Clinic

fully accredited by
The Joint Commission on Accreditation of Hospitals

Member of
American Hospital Association
New England Hospital Assembly
Massachusetts Hospital Association
Council of Boston Teaching Hospitals
American Protestant Hospital Association
Association of American Medical Colleges, Council of Teaching Hospitals
International Union Against Cancer
Association of Cancer Institutes

Residency programs approved by
American Medical Association
Internal Medicine
Pathology (Anatomic and/or Clinical)
Neuropathology
Radiology
Surgery
Thoracic Surgery

Podiatry
Approved by
American Podiatry Association

School of Nursing
fully accredited by
National League for Nursing
Massachusetts Board of Registration in Nursing

School of X-ray Technologists
approved by
American Medical Association

School of Medical Technology
approved by
American Society of Clinical Pathologists

Blood Bank Training Center
approved by
American Association of Blood Banks

School of Cytotechnology
accredited by
American Medical Association

School of Radiologic Technology
affiliated with
Northern Essex Community College

School of Nuclear Technology
affiliated with
Bunker Hill Community College

. . . And he could there do no mighty work, save that he laid his hands upon a few sick folk, and healed them.

(Mark 6,5)

Hands perform the countless wonders that make up the world . . . the world of health care . . . from delivering babies to closing the eyelids of the dead.

Hands are extensions of the heart and mind. For caregivers, they are the instruments by which comfort is given, disease is treated, pain alleviated, and health restored.

We have, therefore, tried to show in this annual report the many ways in which people use their hands to carry out the functions of running a hospital and caring for the sick. We feel that the dedication, concern, and tremendous knowledge of our staff and employees are exemplified in the services performed through their hands.

Report of Management

Again, this past year has been an extremely busy period for the New England Deaconess Hospital, its employees, medical staff, management and trustees.

Our bed occupancy reached 94.1% which represents an effective ceiling for us at this level of overall demand. Our hospital has nearly every bed filled from Monday through Friday. Occupancy during weekends and holidays such as Christmas, Fourth of July and Thanksgiving predictably drops. Hence, an average figure in the middle 90's does not really reflect the true state of affairs during most of the year. Moreover, during the past 12 months, occupancy was soft during the fall and ran at 100%, except for holidays, from January to the end of our fiscal year on September 30, 1980.

Such a high level of demand places equally high pressures for services on all of the hospital's departments. From nursing to the laboratories, from X-ray to the pharmacy, to housekeeping, dietary, laundry and maintenance, we have been stretched to maintain our traditionally high level of patient service. That we continue to achieve this goal is a real credit to our entire staff.

Reflecting on this busy year, net operating revenues reached a new peak of $69,070,791. After expenses amounting to $68,933,232, and non-operating income and expense, we ended the year with a surplus of $1,830,486. We are pleased that these results exceeded our budget by a modest amount because it is important to generate a substantial surplus in today's inflationary environment in order to maintain adequate working capital. For example, if the inflation rate for 1980 turns out to be 10%, we will need at least an additional $1 million just to carry out our current level receivables in 1981.

During the fiscal year, there occurred a number of initiatives and changes worthy of note in this report. First, in order to strengthen management generally, three new Associate Directorships were created; Ellen D. Howland, David F. Lilley and Roger A. Perry, Jr., were promoted to these positions. Also, two new Assistant Directorships were created, and Marjorie R. Pond and Paul A. Babcock were named to these posts. In programmatic areas, we inaugurated a new risk management system designed to tie together in a single integrated approach our medical malpractice review activities, our utilization review program, general liability prevention and medical audits. Under the supervision of our new Director of Personnel, John J. Kilkelly, we have reviewed and made appropriate improvements to our personnel policies, the administration of salary and wages as well as our fringe benefit program.

We have formalized an honored hospital tradition known as administrative rounds. These rounds consist of different members of management going to patient floors, visiting at the nursing stations and talking with patients. Their observations will be used as a basis for improvement of our services to patients. To further strengthen this area, we also created a new position, Coordinator of Patient Relations, who will be responsible for the handling of patient related questions or problems.

Growing regulation at both the state and federal levels continues to threaten our ability to provide the highest quality care for our patients. While most regulatory and legislative efforts to severely restrict hospitals failed during the past year, in a last minute compromise, which was approved by the General Court, a one-year 11.5% cap or ceiling was placed on hospital charges. We are happy to report the Deaconess' 1981 budget will be in compliance with this limitation. Clearly, one of the major challenges in the years immediately ahead for hospital trustees and management is to get control of the rate of increase in our charges to patients. If, as an industry, we cannot succeed in doing this, then we can expect governmental agencies to do it for us.

Hospitals are under a great deal of outside pressure to contain costs. From President Carter to Congress, to the American Hospital Association, the State Rate Setting Commission and many others, hospitals are being urged to hold down spending wherever possible and to exercise restraints generally. Economy and efficent management of resources are not new at the Deaconess. By controlling the use of energy, we estimate that in 1979 we saved $92,000, and in fiscal 1980 we saved $108,000. Because of our outstanding past record of achievements, the Deaconess qualified and received an Energy Conservation Award from the Federal Office of the Department of Energy in the amount of $204,650. This grant will be matched by our hospital and used on projects involving our older buildings to make them more energy efficient. We expect to save approximately $80,000 per year as a result of this grant.

Although there were no major construction projects underway during the past year, several small to medium undertakings were brought to a conclusion. The largest was the new 8,000 sq. ft. addition to the Cancer Research Institute. This was completed in the late spring and dedicated in July. Our Cardiac Catheterization Laboratory was moved to larger, modernized quarters, thus paving the way for the renovation of the two operating rooms which were turned over to the Department of Surgery during the summer. We also moved, renovated and enlarged our Hemodialysis Unit. In the space vacated on Palmer 2, we have started a new Peritoneal Dialysis Service. During the winter, spring and early summer, our Maintenance and Engineering Department channelled its energy into renovating space on the first floor of the Deaconess Building for our Podiatry Department and for Diagnostic X-ray's new CAT Scanner which was delivered in August.

In August we switched our source of steam and chilled water from the old Harvard Power Plant, which was originally built in 1905 when the Medical School relocated on Longwood Avenue, to the new Medical Area Total Energy Plant. This was accomplished without any problems. The new Plant is also designed to meet the electrical needs of the Longwood Avenue hospitals, and generating equipment will be installed if and when the necessary environmental approvals are obtained.

In years ahead we anticipate an increasing amount of renovating and moving of departments in what will undoubtedly appear to be a never ending game of checkers. These activities reflect a variety of trends and pressures: the development

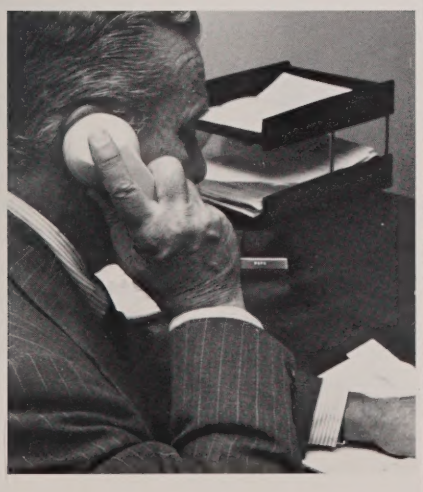
of new services, the shortage of land on which to build new facilities adjacent to our present facilities, and the difficulties in obtaining approval for major new facilities from the regulatory authorities. Inevitably, the Deaconess will have to face the need to construct a major new building to contain replacement beds for those currently in Palmer and Baker. These buildings are 53 and 48 years old respectively. They are totally obsolete by many modern standards and should be replaced as soon as possible. Any major new buildings should also contain space for our rapidly growing support services.

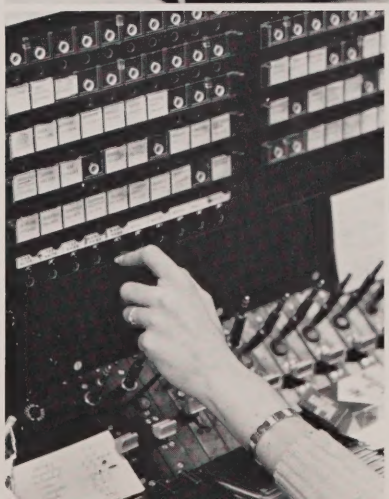
During the year, the hospital received accreditation for two years, the maximum possible, from the Joint Commission. Likewise, our School of Nursing was given 7 years' approval from the National League for Nursing. The American College of Surgeons designated the Deaconess a Category One Cancer Hospital, a classification held by only about 100 other hospitals in the country. Also, our Meissner Laboratory was granted a 2-year accreditation by the College of American Pathologists.

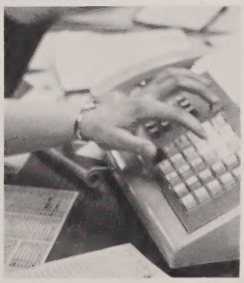
On July 1st Dr. William V. McDermott succeeded Dr. Cornelius E. Sedgwick as Chairman of the Department of Surgery and, in June of 1981, Dr. Robert C. Moellering will succeed Dr. James L. Tullis as chairman of the Department of Medicine. The Search Committees responsible for recommending the new Chairmen are to be congratulated! We are delighted with their respective recommendations.

There is a major challenge lying ahead in 1981 for the Deaconess. On or about December 1, 1980, the the Lahey Clinic will open its own 200-bed hospital in Burlington. We expect this event will materially lessen the need for beds on the part of the Clinic at the Deaconess and, as a result, for the first time in many years our occupancy will be under heavy downward pressure. We have devoted a great deal of management time to this problem during the past year and believe that the impact will be largely felt during the first 6 months of fiscal 1981. As a result of the addition of new doctors to our staff during the past 12 months and increased utilization by those already on the staff, we believe that occupancy figures will return to more acceptable levels by the end of 1981.

During the year, two distinguished members of our medical staff passed away: Dr. Theodore L. Badger and Dr. Shields Warren. To honor Dr. Badger, we have named our Pulmonary Laboratory on Deaconess Two in his memory; and, to perpetuate Dr. Warren's memory, we have succeeded in establishing an endowed







chair to be known as the Shields Warren/ Mallinckrodt Chair for clinical research at Harvard Medical School. Both these physicians shared a deep concern for their patients and adhered to the highest standards of medical practice. The Deaconess Family, their patients and friends will miss them very much.

At the annual meeting last January, three long-time trustees reached the maximum term of service permitted under our bylaws and they retired: John Barnard after 19 years; C. Colby Hewitt with 10 years and William D. Weeks with 10 years. They have served the hospital with great loyalty and dedication. We have missed their active participation and valuable contributions at Board meetings.

This has been a very busy year, with our trustees and many corporation members actively engaged in committee meetings between regular monthly Board meetings. Likewise, our medical staff manages its affairs through a committee system which demands a great deal of volunteered time on their part. Also, the Friends of the Deaconess have spent many, many volunteer hours in staffing the Gift Shop, the Thrift Shop and assisting patients both directly and indirectly. In addition to the annual Pops benefit, the Friends also sponsored a highly successful Ice Chips performance last April. We are appreciative of this time and effort which is so freely given.

We also wish to express our deep appreciation to all of our employees for their dedication and support during the past year

James F. Farr, Chairman
Laurens MacLure, President

Department of Medicine

As the Department of Medicine nears the end of its seventeenth year, many changes are underway. These represent normal patterns of growth and adaptation to changing patterns of medical practice. The number of medical admissions during the past year increased again to 8,706 and now represents 60% of the total. There also was a qualitative change in admission diagnoses reflective of the increased

severity and complexity of medical illness for which patients are triaged to tertiary hospitals such as the Deaconess. This shift is commensurate with national trends which first became evident during the past year. These showed that the percent of hospital admissions for oncologic treatment had increased at an 18% annual rate and treatment for cardiovascular diseases had remained constant, whereas all other subspecialties of medicine had shown a decreased number of hospitalized patients. This is probably due to the increased availability of effective new drugs which can be administered on an ambulatory basis and to the economic factors that are necessitating alternatives to hospital bed care.

The three areas of medical department responsibility, service, teaching and research, have all been active during the past year.

Medical Service

In order to provide the senior staff with the support necessary for the delivery of increasingly complex patient care, there have been further increases in the size and activity of the medical house staff. Indepth coverage has been extended to the Intensive Care Unit, Observation Unit, Coronary Care Unit, and Post-Cardiac Unit. Simultaneously with this extended coverage, the rotations through the special units have been stabilized in such a way that pairs of house officers remain on duty in cycles of 24 hours on, 24 hours off. The resulting decrease in the number of individual house officers to which each patient is exposed has led to improved patient-doctor relationships and an improved quality of on-going care.

After a series of discussions over several years, the Department has agreed to an extension of the residency program to embrace the medical service of the Lahey Clinic in its new hospital in Burlington, Massachusetts. This integration of the residency program of the two institutions is a logical sequela. It will provide the Clinic with a fully-accredited, academically-based program. It will obviate the creation of a new teaching program with all of its complexity and cost and will provide high quality medical house staff coverage for the Clinic's hospitalized patients. The benefits to the Deaconess will be equally poignant. Provision will exist for improved ambulatory experience of our house officers through service in the Lahey HMO and walk-in clinic. A larger pool of residents will exist from whom to select Fellows for subsequent subspecialty training. The increased number of young men and women who are taking their postgraduate education here will similarly enhance the recruiting opportunities for new senior staff. Last and far from least the amplified house officer group will strengthen further the tertiary role of the Deaconess as the bulk of graduates enter medical practice throughout New England.

Other affiliations of the residency training program have continued unchanged. These include the Manchester (New Hampshire) Veterans Administration Hospital, the Quigley Memorial Hospital and the Cambridge Hospital. Each of these facilities supplies an experience which is essential to the well-rounded training of young doctors. In addition to these obligate rotations, an elective opportunity has been developed at the Falmouth Hospital for house officers with an interest in the delivery of broad-based Internal Medicine rather than specialization. In conjunction with the new Deaconess affiliation with Brookline Hospital a program also is being planned which will identify from the medical residency program a cadre of junior staff who will develop jointly the primary care opportunities of the two institutions.

Education

A major educational program is essential in order to stimulate the interest of high quality residents to come here for their postgraduate training. All components of the senior staff have given unstintingly of their time to mount this major effort. In addition to standard teaching rounds on the different hospital floors, there is a highly structured program of lectures and didactic teaching sessions each weekday starting with Morning Report at 7:30 a.m. and concluding with subspecialty rounds of different types in the late afternoon and early evening. The willingness of the senior physicians to give so freely of their time has resulted in a Deaconess program of national recognition. This past year approximately 500 American medical school graduates from throughout the country applied here for the 25 positions which were open. This plethora of skilled applicants has made it possible carefully to select individuals who fit well with the spirit and goals of the Deaconess, and thus to work well with the senior staff and patients. The other components of the educational program have remained largely unchanged during 1980. The Continuing Medical Education for our senior staff, as evidenced by grand rounds and similar exercises continues to fulfill this important need. The undergraduate teaching of medical students from Harvard has remained more or less constant. Requests for elective rotations of students from other medical schools has continued to increase.

Research

There has been a slow but gratifying increase in the research activities within the Department. This was not deemed to be one of the essential early goals of the Department and hence has lagged about a decade behind the other activities. With an increase in the number of fulltime staff within the Department, however, there has been a resulting increment of high quality clinical and laboratory research. Currently, there are sixty research protocols of a clinical type under active pursuit. Seven members of the fulltime group also received outside grant support for their investigative work this year. This does not include the active research program of the Joslin Foundation from which the hospital greatly benefits. Although the latter is funded through an outside institution it is conducted primarily here. With the arrival of the new Chief of Medicine a further significant move in the direction of broadened research efforts is anticipated.

James L. Tullis, M.D.
Chairman

Department of Diagnostic Radiology

"Hands-on" experience. Patient contact. These early bywords for quality medical training and care have become cliches but they nevertheless remain the fundamentals of medicine for people. In diagnostic radiology, a variety of machines have the potential of disrupting application of these fundamentals, intruding upon the intimacy between patients and physicians, and the task of radiologists becomes the delicate weighing of technology and caring.

With these goals in mind, the Department of Diagnostic Radiology at the Deaconess has pursued a rigorous program of equipment purchase and education and a policy of professional discussion with referring physicians and patients.

After our Determination of Need for a computed tomography unit (CT scanner) last year, the foremost units were evaluated for versatility, engineering and cost, and the Department proceeded with the purchase of a General Electric scanner. A special room was built to house the unit, and the first patients were being examined as the fiscal year ended. This unit offers noninvasive diagnosis of thoracic, abdominal and peripheral disease under the direction of Drs. Philip Costello and Herbert F. Gramm and diagnosis of brain and spinal cord disorders under the direction of Dr. Daniel H. O'Leary.

A fulltime CT data coordinator in conjunction with the physicians will assess the efficacy of this machine as part of a policy of constant improvement in the application and assessment of CT scans. These efforts will be coordinated with similar assessments of ultrasound and nuclear medicine studies. Likewise in the other areas of radiologic assessment, the Department continually evaluates the effect of policy on patient care to assure that all the studies which are necessary are performed and that studies with a low likelihood of yielding clinically significant information are not performed.

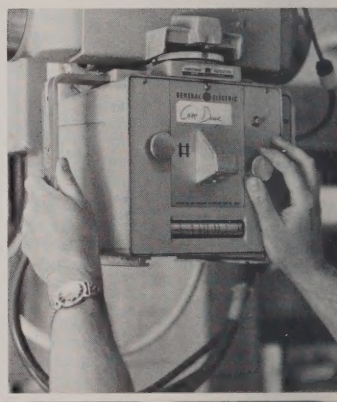
Frequent discussions between the Deaconess radiologists and referring physicians aid in the transfer of our research analyses to clinical application. Such discussions allow each patient's status to be compared to the capabilities of the various imaging procedures in order to generate a plan for the appropriate tests to be made in a sequence which best serves the patient's needs. Because Diagnostic Radiology is a service department, this approach allows the staff to assure its users will gain the greatest benefit from its studies.

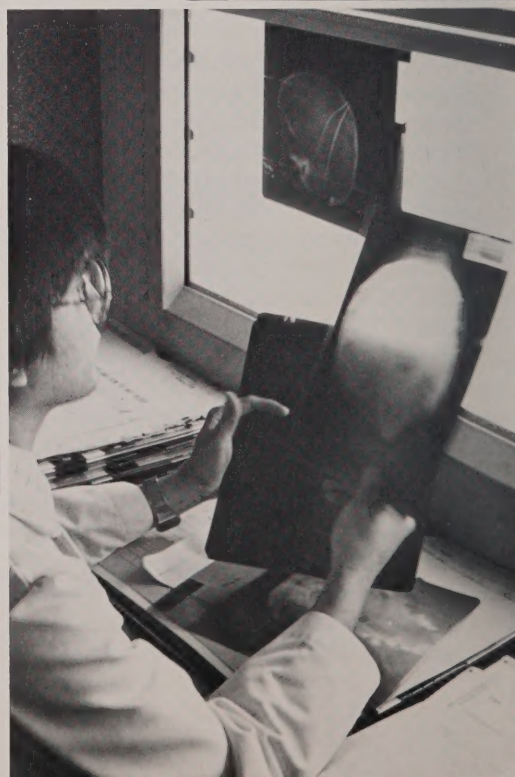
Our success in developing useful clinical research has led the Department to investigate the need for animal research in diagnostic radiology. Such work is a logical extension of our clinical efforts and will be pursued during the coming year.

Training programs complete the triage for an academic department with patient care and research responsibilities. The Department of Diagnostic Radiology is involved in student and post-graduate teaching at Harvard, and maintains its own three-year residency program, one-year fellowships, and a two-year technician education course. In each instance the trainees learn their field by working closely with the patients and with the staff as part of the educational process.

In this manner the staff of the Department of Diagnostic Radiology at the New England Deaconess Hospital applies their hands and technologic capability to further the goal of personal care.

Melvin E. Clouse, M.D.
Chairman

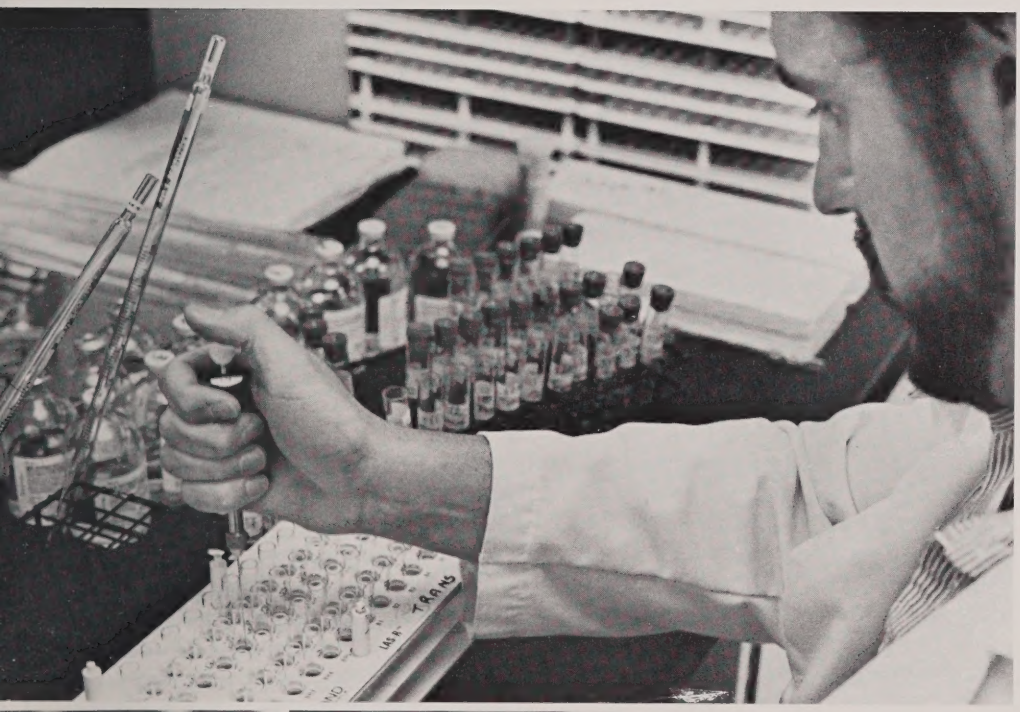




Department of Pathology

In a departure from the usual perspective of the Annual Report, it seems appropriate this year to look back over the years. Dr. Shields Warren, who established and built the Department of Pathology, died July 1, 1980, 53 years after he came to the New England Deaconess Hospital. There had not been a department of pathology before Dr. Warren came, but, at the time of his death, the department has 300 employees and multiple specialized laboratories with sophisticated equipment mostly housed in the William A. Meissner Laboratory Building. Two other Deaconess buildings owe their origins to Dr. Warren—the Cancer Research Institute and the Shields Warren Radiation Laboratory.

Dr. Warren came to the Deaconess in 1927 after his training in pathology at Boston City Hospital under Dr. F. B. Mallory. At the same time he became the pathologist at the Huntington Hospital and a member of the Cancer Committee of Harvard University, a committee started by Dr. John Collins Warren (a different Warren family). And so it is logical that the several branches of Dr. Warren's career would develop simultaneously: pathology, particularly endocrine and tumor pathology, cancer research, radiation research, and medical education. One should recall that 1927 is just a few short years after the introduction of insulin in the treatment of diabetes mellitus, in the earlier years of successful surgical treatment of thyroid disease and several years before the first surgical removal of lung carcinoma, to delineate a bare frame of reference. It is revealing to review the surgical specimens and autopsies of that first year. About one third of the surgical specimens are thyroids, and the autopsies include not only the many kinds of cancer that are still problems, but some cancers which now are dealt with very successfully and some infectious diseases that are no longer problems. One patient that first year had been in the hospital for seven years with Parkinson's disease before she died.



Dr. Warren rapidly became well known for his work in the pathology of diabetes mellitus, with the appearance of his book with that title, first in 1930 and reappearing in four editions, the later ones with co-authors. His work on thyroid tumors with Dr. William A. Meissner resulted in the fascicle, Tumors of the Thyroid Gland of the Atlas of Tumor Pathology, the standard reference (in two editions) for thirty years. His cancer research and radiation research were widely recognized, and the radiation research provided the guidelines for much of the radiation safety measures in existence today. It is from these efforts that the Cancer Research Institute and the Shields Warren Radiation Laboratory developed. His on-the-spot investigations in Nagasaki and Hiroshima (Dr. Meissner was at Nagasaki) led to the establishment of the Atomic Bomb Casualty Commission. He became the first Director of the Biology and Medicine Division of the Atomic Energy Commission. He was asked by NASA to establish the safe limits of different kinds of radiation to which the astronauts could be exposed.

There is no room in a brief departmental report to chronicle adequately the incredible achievements of Dr. Shields Warren, who at the same time was Pathologist-in-Chief of the New England Deaconess, New England Baptist and Pondville State Cancer Hospitals, Professor of Pathology at Harvard Medical School, Chairman of the Executive Committee of the Board of Trustees of Boston University and United States Representative on

the United Nations Scientific Committee on the Effects of Atomic Radiation as well as multiple other jobs. The clear perception of the Deaconess leadership of fifty years ago allowed the chemistry of such an extraordinary man to interact with the interests of Dr. Joslin, Dr. Lahey and others to produce an explosion of information and growth that benefited everyone.

Dr. Warren established the pathology residency program fifty years ago, and some think the training of pathologists may have been his greatest achievement. The former residents include an impressive array of professors, department chiefs, contributing pathologists and even medical school deans and a university president. He established a precedent which the department still follows in considering the resident training as one of the most important objectives of the department.

He had a great ability to pick key persons to work with him in different areas. Dr. Olive Gates worked with Dr. Warren for most of his career, especially in cancer diagnosis and cancer research and is finishing up some of their projects which were in active progress at the time of Dr. Warren's death. Dr. William A. Meissner was Dr. Warren's right arm in the hospital department and then became the Chief after Dr. Warren. His deep concern for patient welfare, his uncanny diagnostic skill and the warm relationship between him and the residents carried on and expanded the department tradition. He developed further the department's reputation in thyroid and endocrine pathology and the pathology of cancer. It was under his direction that the Meissner Building was planned and started, and so it is particularly fitting that the building carry his name.

Dr. Meissner and Dr. Warren together recruited Dr. Bradley E. Copeland thirty years ago. Through his efforts as one of the early dedicated clinical pathologists, the clinical pathology laboratories developed rapidly at the front of the pack as clinical pathology entered the era of automation.

From such a sketchy review of the early years of Deaconess pathology, it is clear that the present department has learned valuable lessons from past experience: (1) a successful department in the hospital and in the world needs the support of the hospital, the insemination of fertile minds by provocative and vigorous clinicians and the freedom to pursue the enticing clues; (2) training programs are essential in providing superior staff and in stimulating the teachers as well as the obvious role in seeding the greater community; and (3) involvement in multiple institutions is a strengthening force which benefits everyone instead of attenuating vigor, but needs active support to function and prevent dilution of effort.

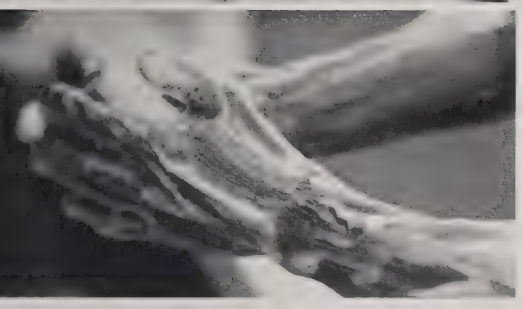
There is little to be found common in the laboratory of 1927 and 1980. What would someone from that old laboratory say if he could see the present-day monolithic SMAC—the machine which, with delicate care and careful feeding, can turn out huge volumes of multiple different chemical measurements, some of which did not even exist in 1927, even as the time-consuming manual methods? (In 1950, it took the author all day to determine the potassium levels of six sera, a job that now is done in minutes more accurately.) Yet, the essential ingredients are mostly the same—hospital support, outstanding personnel, multi-institutional coverage, challenging clinical problems, and provocative clinicians. Only the direction can never be re-duplicated.

Merle A. Legg, M.D.
Chairman

Department of Surgery

For the entire hospital and for the Department of Surgery in particular, the year 1980 has ushered in an unpredictable but exciting new era in the long history of the hospital. This has been occasioned by the building of the new Lahey Clinic Hospital in Burlington and the resulting dramatic shifts within the Department of Surgery. The surgeons of the Lahey Clinic have for decades represented a strong, productive and stimulating segment of the Staff and are major contributors to the teaching and training program. Their departure will leave a gap that will be difficult to fill, but fortunately the separation is not absolute and a number of segments will maintain continuing contact with the hospital and with the Department.

Our major loss will be the departure of Dr. Cornelius E. Sedgwick who reached



retirement age on June 30, 1980 but who has continued to operate and represent a strong and stimulating influence for the residents in training. When the bulk of his surgical efforts are eventually moved to Burlington, we will all feel a sense of deprivation and hope that our contacts will be maintained in different ways over the coming years.

The Division of Thoracic and Cardiovascular Surgery under the direction of Dr. F. Henry Ellis, Jr., of the Lahey Clinic will continue to function as in the past with the Deaconess Hospital as the primary geographic base.

A Division of Neurosurgery under the direction of Dr. Charles Fager of the Lahey Clinic will also maintain a major presence in the Deaconess Hospital and will continue to provide the high level of service to which we have all become accustomed. To fill any gaps which may occur because of dual commitments to Burlington, Dr. John Shillito has joined the staff and expects to function actively in neurosurgery over the coming years.

A Division of Gynecology under the direction of Dr. Clement Yahia will lose several of its able staff, but these have been replaced out of a large number of gynecologists in the Longwood area who have applied for staff privileges during the past few months.

The Division of Urology under the direction of Dr. Leonard Zinman will continue to function at the Deaconess Hospital through the joint residency program between the hospital and the Lahey Clinic in this particular specialty. There will undoubtedly be some slackening in total volume of surgery done at this hospital by Dr. Zinman and his Lahey Clinic colleagues, but the accession to the staff of three new members of the Division should serve to fill whatever gap exists in the Division over the years.

Other Divisions of the Department—Vascular, Anesthesia, Orthopedics, Ear, Nose and Throat, and other specialized segments of the broad field of surgery should be relatively unaffected by the move of the Lahey Clinic and plans are underway to strengthen all of the existing divisions and to maintain the diversity and level of expertise which is essential for the functioning of a large, urban, tertiary care hospital. Members of the Department have continued to be active on the national and international scene as well as maintaining the local applications of recent advances in surgery as they have evolved.

Dr. Anthony P. Monaco, now the Director of the Cancer Research Institute, was Co-Chairman with Mary Wood of the Eighth International Congress of the Transplantation Society which met in Boston during the early summer. This type of relationship and activity assures the hospital that the Division of Transplantation and Immunology will continue to be represented among the leaders of this field and that new developments as they arise will maintain the strength and reputation of this particular Unit.

The introduction during the past decade of surgery for morbid obesity has been one of the new and challenging developments in the field of technical surgery as well as in the metabolic aspects of this distressing and complex problem. Under the direction of Dr. George Blackburn and Dr. Bruce Bistrian, the Division of Metabolism and Nutrition has represented a strong force in the country and has pioneered in the technical aspects of gastric bypass as well as in the metabolic research which has been the supportive arm in the development of this type of surgery.

Dr. Elias Menkes has joined the staff with an extensive background in critical care medicine and infectious disease. As Medical Co-Director of the Intensive Care Unit and the Recovery Room, he will integrate the flow of patients through these areas of critical care delivery and also significantly upgrade the training for residents and staff alike. In addition, he will serve as Medical Director of Respiratory Therapy, an important component of the care of patients with pulmonary impairment.

Utilization of Ambulatory Surgery facilities has continued to expand. With increasing refinement of anesthetic and surgical techniques, and because of persistent high demand for operating room facilities and considerations of cost containment, the increasing use of Ambulatory Surgery has enhanced patient care while improving utilization of hospital facilities.

With a flexible and continuing evaluation of the surgical needs of the New England Deaconess Hospital and with judicious expansion of some of the specialty and sub-specialty divisions in the Department, the hospital can anticipate a stable and diverse surgical effort which will maintain the excellence in patient care characteristic of the past, and move into a challenging future with confidence and enthusiasm.

William V. McDermott, Jr., M.D.
Chairman

Friends of the Deaconess

The many hands of the Friends of the Deaconess reach out to be of service to the patients both directly as well as indirectly through the hospital. Many are the faithful volunteers who give hours of their time to aid and to comfort an ill or lonely person with a listening ear or a helping hand. Other Friends work long hours at the Thrift Shop or the Gift Shop to raise money for the special equipment which otherwise might not be available for the care of the patients. Still others give concerted effort to the special projects of the Friends. These are directed toward specific goals such as the second $50,000.00 given this past year for help constructing the needed additional research area in the Cancer Research Institute building.

Likewise, this past year, the combined receipts of the annual Christmas Bazaar, Night at the Pops, and Methodist Church gifts produced a total of $8,796.00 for the School of Nursing Scholarship Fund. This larger-than-usual amount enabled the Friends to provide a second $500.00 award for graduate study in addition to the award given annually by the Nurses' Alumnae Association at commencement.

Undoubtedly, the most exciting event of the past year was the opening night benefit performance of Ice Chips '80 held April 10 at the Walter Brown Arena. The Friends of the Deaconess, under the very able chairmanship of Mrs. Lauriston Ward, Jr., were privileged to be a part of that unique and thrilling event. Those involved were keenly rewarded for many hours of labor, not only because of the amount of money raised, but particularly for the spirit of good-will generated for the hospital. The direct result of this effect transformed the roof of the Baker building into a serene and colorful Roof Garden area primarily for the use of patients. Our thanks go to Mr. Roger Peterson, head of the Laundry and Grounds Department, for his vision, suggestions, ingenuity and perseverance in completing this project in time for use during the summer of 1980. The work of improving the doorway continues, as well as the task of providing an additional area of shade.

Again, it has been a busy but fulfilling year for the Friends of the Deaconess. It is truly said, "Many hands make light work."

Mrs. Lois J. Krall, President
Friends of the Deaconess, Inc.

Joint Center for Radiation Therapy

This has been the twelfth year of the Joint Center for Radiation Therapy. During this past year, 2504 new patients were seen. This represents a 4% increase in new patients. The distribution of these patients by Joint Center hospitals is as follows:

New England Deaconess Hospital	770
Beth Israel Hospital	569
Brigham and Women's Hospital	536
Childrens Hospital Medical Center	252
Sidney Farber Cancer Institute	229
Faulkner Hospital	148

As reported last year, the Joint Center facilities are being used at capacity. This has created serious problems in scheduling, patient delays and an increase in equipment failure. In an attempt to alleviate all this, a number of planned physical changes in the Joint Center are being effected. Our most critical need, that of a new supervoltage linear accelerator to meet the increasing demands has unfortunately not been approved by the Health Systems Agency. We have been approved for consolidation of the Children's Hospital facilities within the Brigham and Women's Hospital new department to be

completed in 1983. This department will include not only the two linear accelerator replacements for our current machines, but a machine primarily designed for whole body and wide field irradiation. Treatment planning and simulation will be provided in expanded space at the Sidney Farber Cancer Institute. A new simulator has been purchased to replace the one formerly at the Boston Hospital for Women. This consolidation of treatment planning efforts will add greatly to the Joint Center efficiency and avoid the necessity of patients traveling to Pond Avenue for simulation. Despite these changes we currently are working overtime and will likely be running some of the machines for two shifts. We have been unable to implement this thus far as we have been unable to find additional technologists. A major aspect of our increase in patient numbers has been the greater acceptance of primary radiation as an alternative to mastectomy in early stage breast cancer. This form of therapy takes a significant amount of treatment machine time, further limiting our available resources. Despite this we are making every effort to continue to treat this important group of patients.

The multi-faceted research and development activities at the Joint Center for Radiation Therapy all have as their goal, improvement in the treatment of malignant disease. The common theme is to improve cure with a diminished likelihood for untoward complications. This requires study of the basic biology of malignant disease and of the normal tissues affected by its treatment. Study of new techniques and methods of treating patients is an important part of the research effort of the Joint Center. These studies use new concepts or techniques found in the basic biologic laboratories or in our physics and engineering group.

The major clinical research activities of the Joint Center continue to be the primary treatment of breast cancer without mastectomy. The number of patients treated increased this last year one and one half times that in the previous year. The results continue to be encouraging. Our patients do as well as comparable groups treated with mastectomy but avoid the loss of the breast. We continue to modify the technique in order to obtain a maximum likelihood for cure with the best cosmetic results. The best results occur with local removal of the tumor and careful reapproximation of breast tissues, assessment of extent of the disease into the regional lymph nodes, careful radiation therapy and chemotherapy when appropriate. Studies of Hodgkin's disease and other tumors of lymphatic system are continuing. Our results in these treatments are among the best in the country. Since both radiation and chemotherapy can be effective in these diseases, important research is concerned with understanding how best to use chemotherapy and irradiation, maximizing cure while not provoking excessive complications. The Joint Center has been collaborating in multi-disciplinary trials to study the value of radiation and chemotherapy in improving the surgical treatment of a variety of gastro-intestinal malignancies. The results of these trials are quite encouraging as it appears that post operative radiation and chemotherapy clearly improve the treatment of cancer of the colon and rectum. The combined use of radiation and chemotherapy is also being actively investigated in tumors of the head and neck and a variety of pediatric malignancies, all of which seem to have encouraging results.

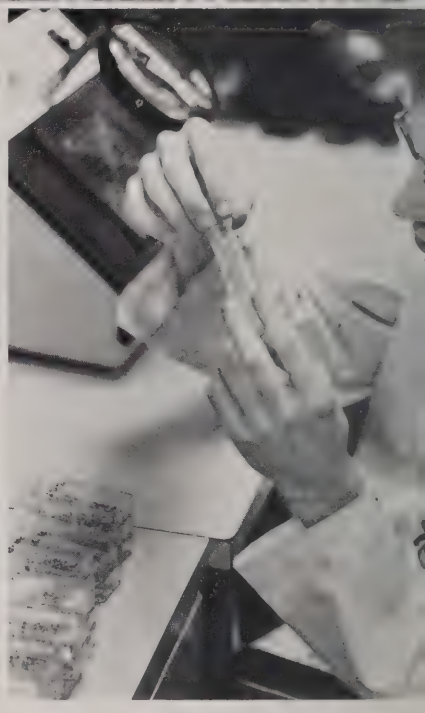
The biological laboratories of the Joint Center for Radiation Therapy have been quite productive during this last year. The mechanisms by which cells develop their resistance to the drug adriamycin continues to be a major focus of laboratory investigation. Somatic cell genetic techniques as well as basic molecular biology have been devoted to better understand the mechanism of the development of

such resistance. The repair of radiation damage to cells continues to be another major investigative effort of the Joint Center. This may have important clinical correlations and is studied in collaboration with the physiology department of Harvard School of Public Health. Techniques have been developed at the Joint Center for the long term in vitro growth of human and mouse bone marrow. This marrow is being studied in order to understand its basic physiology and leukemic transformation. It is also hoped that these studies will offer better techniques of bone marrow transplantation. The use of unsealed radioactive isotopes in the treatment of malignant disease is a major laboratory interest. Radioactively labeled hormone-like compounds have been developed which seem to target to breast cancer cells in culture. It is hoped this will have clinical importance. Drugs have been described which appear to sensitize certain tumor cells to radiation. We have set up an active laboratory program to study how best to utilize these agents with radiation and chemotherapy. Basic research in studying those agents which increase tumor promotion has revealed changes in the membrane of cells concomitant with such promotion. In the course of these studies, assay for those agents which can cause damage to the embryo in a pregnant woman appears to be an unexpected but important finding which is being actively studied. A new area of interest to the Joint Center has been to use radiation to aid in the treatment of rheumatoid arthritis. Two projects in this area are underway. One uses total nodal irradiation in order to change the immune constitution of the patient. Local institution of radioactive colloids into badly affected joints also appears to be of value in this disease and is also actively being pursued.

The division of physics and engineering is engaged in an extensive developmental project in collaboration with the Massachusetts Institute of Technology to develop methods of optimization of dose distribution by a variety of techniques including computer control of the therapy machine during treatment. Six patients have been treated with this technique during this last year in an attempt to increase the dose to the tumor without excessively damaging the normal tissues. During this next year we anticipate a significant increase in patients undergoing this treatment. All these studies are being done using the computerized 12 million volt linear accelerator at the New England Deaconess Hospital. The basic study of the behavior of the scatter dose is important to the understanding of the distribution of radiation during patient treatment and is actively being studied. An extensive program of quality assurance in collaboration with International Atomic Energy Agency has shown that excellent precision in radiation dose can be obtained. A variety of technological advances are being made in order to improve accuracy and reduce unwanted radiation outside the target volume.

In summary, patient care, education and a multi-faceted research program continue to be the major activities of the Joint Center for Radiation Therapy. While these studies proceed at many levels, they all have as their goal a reduction of the morbidity and mortality associated with malignant disease.

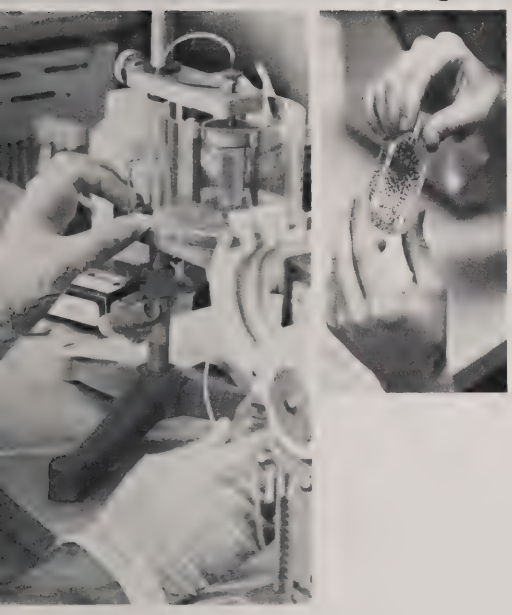
Samuel Hellman, M.D.
Director



Shields Warren Radiation Laboratory

This laboratory, the first of its kind in the northeast, continues to make important contributions to research in the diagnosis and treatment of cancer and cardiovascular disease, from five departments, Experimental Diagnostic Radiology, Experimental Nuclear Medicine, Radiation Biology, Experimental Pathology, and Experimental Radiation Therapy. Research reports for the latter two departments are presented under the Cancer Research Institute and the Joint Center for Radiation Therapy, respectively.

Research support for the laboratory through Harvard Medical School and its affiliated hospitals has continued to be strong, and an important factor has been the decision on the part of the National Institutes for Health to continue to support Experimental Radiation Therapy for five instead of three years, at an increased level of funding, of about $500,000 per year. This was achieved as the result of peer review of the research program which



awarded a remarkably high number in the complex scoring system by which grants are awarded.

Experimental Diagnostic Radiology

Under the leadership of Dr. Herbert Abrams and Dr. Norman Hollenberg, this laboratory continues to explore methods for enhancing diagnosis in the areas of cancer and cardiovascular disease.

In terms of specifics, there are 15 or more protocols being pursued here, with the major thrusts being cancer diagnosis and radiation biology, as well as additional projects pointed toward cardiovascular problems, neurological and kidney problems.

There has been an important extension of the laboratory work relating to the development of computer axial tomography and much of the expertise of the department has been dedicated to creating new imaging agents in nuclear medicine, using the sophisticated chemistry which is now being employed to create those new agents for computerized tomography.

Similar kinds of logic are being used to identify ischemic myocardium which has been damaged by coronary occlusion. This is of particular importance, not so much because the diagnosis of myocardial infarction is difficult, but because the delineation or definition of the amount of myocardium at risk has been very difficult to determine; now the major effort is focused on reducing the amount of myocardial injury after coronary occlusion.

The laboratory has also discovered a new communication system which may have enormous implications. Tumors implanted in experimental rodents are being used to study blood supply. One of the chief characteristics of cancer cells is their autonomy. It has been perceived that not only the tumor, but also its blood supply are autonomous, and perhaps even more important, the autonomy extends beyond the range of the tumor which is capable of modifying the blood vessel to increase the blood flow it requires. In terms of why the blood vessel becomes larger and why it, as well as the tumor, become autonomous, there are two possibilities: that the increase in blood flow through the vessel in some way modifies it, or that some sort of communication exists, which operates in reverse. This is based on two possibilities: either there are tiny vessels such as lymphatics which are yet to be seen, or in some manner cells communicate with each other, creating a collateral formation analogous to tumor growth, in which the tumor guarantees its own blood supply by stealing the capacity to develop collateral formation. If it were possible to prevent the tumor not only from modifying a blood vessel so it becomes larger, but also rendering it unresponsive to stimuli which allow the tumor a selective advantage of obtaining blood, tumor growth might be controlled.

Experimental Nuclear Medicine

In the field of the development and application of internally-emitting radiopharmaceuticals, the kinetics of uptake and radiotoxicities of several radionuclides used routinely in nuclear medicine have been conducted. Experiments involving thallium-201, a radiopharmaceutical that is used as a myocardial imaging agent, have been completed and indicate that the radiotoxicity of this nuclide is extremely sensitive to changes in intracellular concentrations. Indium-111-oxine and technetium-99m-pyrophosphate are presently being investigated, and while the uptake and radiotoxicity of the latter by V79 cells has been marginal, those of the former are substantial. The laboratory has also embarked on the study of two positron emitters, bromine-77 bound to deoxyuridine and fluorine-18 bound deoxyglucose. The results of these studies should be extremely relevant to the elucidation of the radiotoxicities to be expected from these radionuclides in various tissues.

The laboratory under the direction of Dr. S. J. Adelstein has also been active in the design and development of new radiopharmaceuticals. Hydroxymercurated polycyclic agents have been prepared by direct Hg-203 hydroxymercuration to give products having specific activities of 1-2Ci/mmol. This represents a 10-20 fold increase in specific activity compared to the same agents prepared by isotope exchange. The biodistributions of Hg-203 hydroxymercurated fluorescein (MF) and phenolsulfonophthalen were determined

in animal models. Scintiphotos taken one hour after administration indicated that the highest concentrations of the agents were in the liver and kidneys, with little accumulation in the heart and lungs. These findings were confirmed by analysis of the tissues using an automatic gamma system. These biodistribution data indicated that the highest radiation dose is delivered to the liver, kidneys, and intestines.

Experimental infarcts in research animals produced by ligation of the left anterior descending coronary artery were visualized by gamma scintigraphy. Hg-203 MF was administered and scintiphotos were taken. After samples of tissues were counted in an automatic gamma system analyzer, it was found that the concentration of Hg-203 MF was slightly greater than Tc-99m PP_i but its infarct to normal ratios were lower; therefore, compared to Tc-99m PP_i mercurated fluorescein does not demonstrate better *in vivo* distribution in the experimental animal. Six other agents tested also appeared to be inferior to Hg-203 MF for infarct selectivity. Another class of myocardial imaging agents that has been investigated utilizes radioiodinated beta adrenergic antagonists. One of the six agents analyzed demonstrated significant myocardial selectivity with heart: lung and heart: liver values greater than 1.5 at both 15 and sixty minutes.

Investigations are also underway of technetium chemistry related to nuclear medicine which is designed to elucidate the basic chemistry of technetium, to establish the stereochemical and ligand preferences of the element in various oxidation states, and to apply the knowledge to the design of new radiopharmaceuticals.

Radiation Biology

The work of the Radiation Biology Laboratory under Dr. Henry I. Kohn continued to center on the genetic effects (heritable mutations) of X-rays and chemicals in mice. Further studies using germ cells treated with X-rays or TEM (an alkylating agent) have shown that the very large group of histocompatibility genes yields very few mutants compared to the "7-locus" test-system, the only other one extensively studied. In other experiments with ethyl alcohol and its chief metabolic product (acetaldehyde), no dominant lethal mutations were induced, contrary to a report in the literature. As in the past, mutant lines of mice were supplied to various laboratories. The mice are of special interest for the study of the immune system, and are contributing, for example, to the study of the molecular structure of DNA in histocompatability genes. At the conclusion of the year, the experimental work with mice was discontinued. The mutant lines under development and those maintained for general distribution were transferred to the Cancer Center at Northwestern University Medical School, where a histocompatibility-genetics laboratory is being established by Dr. Roger Melvold, who worked here with Dr. Kohn for a number of years. Dr. Kohn has shifted his primary interest to the broad field of environmental epidemiological risks, especially those relating to cancer and genetics.

Robert D. Pence
Administrator

Cancer Research Institute

Three events of change occurred during the year in the Cancer Research Institute. The first was the death of the founder of the Institute, Dr. Shields Warren, on July 1, 1980 for whom a memorial service was held at Marsh Chapel of Boston University on September 18. Dr. Warren's contribution to the Institute as Scientific Director, and after his retirement from that position, as a Member, has been immeasurable.

The second event was the appointment, effective July 1, 1980, of a new Scientific Director, Dr. Anthony P. Monaco, to replace Dr. William V. McDermott, Jr., who has ably led the activities of the Institute since 1973, and who has now become Chairman of the Hospital's Department of Surgery.

The third event was the dedication on July 22, 1980, of the new wing of the Institute, begun during the previous year. The opening ceremony was held in the one completed laboratory floor of the new wing, occupied by Dr. George H. A. Clowes, Jr., and was attended by donors, or their representatives, who made construction of the new wing possible; by members of the hospital administration and other departments; and by members of the Cancer Research Institute staff.

Biochemistry

Under the leadership of Dr. W. Eugene Knox, consolidation of this laboratory, begun last year, has now been completed and the unit is functioning in a suite of four rooms. A varied program of research and publication is being conducted. The international scientific journals *Enzyme* and *Biochimica et Biophysica Acta* ("Enzymology") are edited here by Dr. Knox. Drs. H. Kadowaki and P. C. Bibb are conducting, respectively, studies on the isozymic variants of the mitochondrial forms branched chain amino acid transferases and on methods to quantify the lysosomes in various organs by their chemical composition.

An unusual study is the location in chromosome linkage group I of the new rat mutation discovered here for *infantile ichthyosis* (i). Its distances from the genes for albinism (a) and for pink-eye (p) are being measured by the incidences of cross-over of these characteristics.

Experimental Pathology

The work of this laboratory was interrupted on July 1 by the death of Dr. Warren. The projected research program on radiation carcinogenesis and the combined effect of radiation and asbestos or 3-methylcholanthrene was so well conceived that a continuation of this research under the leadership of Dr. Clark Brown with Dr. Warren's other associates, Dr. Olive Gates, Miss Rosanna Chute, Miss Natalie Fossati, and Miss Ruth Marshall, has been achieved with a minimum of effort.

Numerous requests from experimental laboratories in this country and abroad have been filled for material from two rat tumors of the pancreas and adrenal, isolated and maintained in this laboratory.

In addition, cooperative research is going forward between this laboratory and the Harvard Laboratory of Human Reproduction and Reproductive Biology on the development and prevention of cancer of the prostate from excessive hormonal stimulation. The hypertensive effect

of transplanted adrenal tumors is also continuing in cooperation with Dr. William M. Manger of the National Hypertension Association.

Mammalian Differentiation

Under the leadership of Dr. Annemarie Herzfield, research in this laboratory has shown that changes in enzyme amounts exhibited by rats injected with hormones vary with the enzyme, the tissue, and the age of the animal. The overall effects of tissue-specific enzyme responses to endocrine supplementation are being assessed with a view to the possible effects that hormone treatments of host animals may have on the biochemical composition of tumors and host tissues.

In the last year, the laboratory has studied some folate-requiring enzymes that catalyze sequential biochemical steps. In tissues of adult rats these enzymes are distributed in parallel, while during development and in tumor hosts the enzyme required for the formation of an amino acid predominates. Since the enzyme is essential for protein synthesis (and therefore for tumor growth), its dependence on vitamin B_{12} is being studied in order to determine if growth in a specific tissue can be retarded by manipulating the supply of cobalamins.

Medical Oncology
The Section in Medical Oncology of the Cancer Research Institute, under Dr. Jacob J. Lokich, has been active in chemotherapy drug development and Phase I, II, and III Studies in the treatment of advanced diseases. A major thrust of chemotherapy programs has been the Phase I development of 120 hour constant infusion treatment programs employing VP-16, MITOMYCIN C, VINBLASTIN, and CISPLATIN. Ambulabory constant infusion programs in Phase I have been applied for 5-FLOURO-URACIL (5-FU), MITOMYCIN C and VINBLASTIN, and have resulted in decreased gastrointestinal toxicity as a dose limitation of these agents. Phase III comparative trials have been initiated and are accruing patients in the adjuvant treatment of colon cancer with 30 day constant infusion 5-FU; a comparison of 5-FU bolus versus 5-FU infusion for advanced colonic cancer; and comparative trials involving chemotherapy and hormonal therapy in adjuvant breast cancer. Collaborative trials involving de-arterialization and hepatic infusion and irradiation have been initiated for primary hepatobiliary tumors. Tumor marker studies continue to be actively pursued in collaboration with various investigators around the country. Clinical and biological correlation of Theratin, serum amyloid A, and gross cystic disease fluid protein (GCDFP) are ongoing.

Nutrition
The role of therapeutic nutrition in support of the hospitalized patient continues to be recognized as an important medical advance. The credibility of this new discipline depends upon continued basic clinical research. Major technical advances in the effectiveness, efficiency, and specificity of animal studies and clinical protocols have been developed this year. As a result, we are able to create new dietary therapies which will benefit a variety of different conditions, including cancer, surgery, gastrointestinal disorders, diabetes, and those of the geriatric, critical-care patient population.

The primary focus of the Nutrition Laboratory, under Dr. George Blackburn, continues to be on the importance of the body's metabolic response during illness, particularly protein metabolism, making use of new biochemical techniques. New investigators in this unit have begun to investigate lipid biochemistry, particularly the use of a new synthetic fat that may prove to be uniquely beneficial in the sick and injured patient.

Application of our computer analysis capability to the hospital Nutrition Support Service has greatly improved the day-to-day delivery of oral and intravenous diets and provides important feedback by analyzing patient outcome each year, thus improving our ability to serve the hospitalized patient. Additional foci for the upcoming year include the study of relationships between diet, nutrition, and the process of aging; and the development of a unique medical and surgical treatment program for morbid obesity.

Surgical Metabolism
At the present time, the objective of this laboratory, under the direction of Dr. George H. A. Clowes, Jr., is to delineate the biological mechanisms which control the balance between protein synthesis and protein breakdown during serious infection, after severe injury, or in the presence of liver failure. Survival under these conditions depends upon the transfer of amino acids from muscle to the central tissues such as the liver for synthesis of the proteins required for immunological defense against bacteria, for wound healing as well as for the maintenance of structural integrity of vital organs. To this end, clinical studies have demonstrated significantly accelerated rates of proteolysis and amino acid release from muscle not only in septic and post traumatic states, but also in patients suffering from severe liver disease. A method has been developed which predicts survival or death associated with hepatic failure and which has been proven to be better than 95% correct.

The clinical measurements have been supplemented by *in vitro* incubation of living tissues which has shed considerable light on the abnormalities of energy and protein metabolism comparing normal and disease conditions.

Transplantation and Immunology
In Dr. Anthony Monaco's laboratory, studies have continued on the mechanism of skin graft prolongation induced in immunosuppressed mice by the infusion of donor bone marrow. Experiments have focused on the *in vitro* reactions of various lymphocyte cell populations present in mice bearing enhanced grafts. In addition, extensive work has been done on the role of pre-graft blood transfusions in prolonging skin grafts in immunosuppressed mice. This work is particularly relevant to clinical transplantation where there is evidence that patients receiving blood transfusions before cadaver renal transplantation have improved graft survival.

Studies have continued on the immunological diagnosis of bladder carcinoma. Analysis has been completed on urines from bladder cancer patients for cancer markers of less than 50,000 molecular weight and greater than 50,000 molecular weight. A less than 50,000 molecular weight antigen has been identified which is found in the urine of patients with bladder neoplasm 94% of the time. There is a false-positive occurrence of this antigen in non-neoplastic urines 15-20% of the time. Two antigens of molecular weight greater than 50,000 have been identified in the urine of bladder cancer patients. The high molecular weight antigen has now been isolated with sufficient purity to be utilized in a radio-immunological assay. Studies are under way to see if these antigens are associated with non-neoplastic states of proteinuria. Eventually, a multi-hospital study will be undertaken to see the screening value of these antigens in the detection and diagnosis of bladder cancer.

Tumor Registry
By a series of improvisations, Marian H. Sciarappa, Registrar, has maintained the Registry and its follow-ups in the absence of computer support during the past year. Nine batches of accessions totalling nearly 3,000 new cases have been processed in addition to the 17,739 cases already registered.

Access to these cases by machine is normally used to schedule those due for follow-up and to generate research information about incidence and treatment effects. Early resolution of the existing technical difficulties growing out of the necessary transfer to a new computer system is now assured. Temporarily, audits of needed information are made from a printout of all cases arranged in order.

Research Administration

Office of Grants and Contracts

Although funding levels have remained fairly constant and the Office continues to manage the Hospital's 20 active research grants awarded from several federal and private agencies, the Office recorded a decline in the number of grant applications submitted for funding. It was the lowest number in recent years. As the administrative office for the Cancer Research Insititute, the Office was involved in the completion of the new addition to the Institute, in coordinating the functions of the Animal Care Committee, and in overseeing the relocation of several laboratories.

Protocol and Cancer Administrative Office

Responsible for administering the affairs of the Committee on Clinical Investigation and the Cancer Committee, the Office during the past year processed for approval 60 new clinical research applications and maintained continuing surveillance of over 75 protocols in progress. The research committee's procedures for the protection of human research subjects were commended by the Food and Drug Administration after a spring inspection. Much of the ongoing clinical research is cancer-related, involving experimental drug and multi-drug trials, and is a core component of the Hospital's Cancer Program, recently awarded Category I status by the American College of Surgeons. Activities integral to the program—the weekly Tumor Board and Tumor Conference, concurrent quality control monitoring through the weekly cancer patient census, and ongoing data collection on new treatment tactics—were maintained and expanded. The ninth annual postgraduate course in cancer was held in June and focused on the most current multi-disciplinary strategies for treating cancer.

Anthony P. Monaco, M.D.
Scientific Director

Report of the Treasurer

Financially, 1980 was a very good year for the hospital. Net operating revenues amounted to $69,285,000 vs. $62,145,000 in fiscal 1979. While expenses were also higher, we enjoyed a small gain from operations amounting to $38,000. After non-operating revenue we showed an excess of revenues over expenses amounting to $1,730,000.

Statistically, 1980 was the busiest year in the hospital's history as indicated by the following comparisons:

	(52 Weeks) 1980	(53 Weeks) 1979
Occupancy	94.2%	94.1%
Patient Days	167,633	170,639
Average Daily Census	460.5	459.0
Average Stay (days)	11.5	11.4
Surgical Procedures	7,170	7,532
X-rays Taken	56,910	56,863
Radiation Therapy	16,170	16,270
Laboratory Units	28,076,319	25,400,000

Last year we indicated that it was hard to envision higher levels of activity, particularly in view of the fact that fiscal 1979 contained 53 weeks. However, patient demand for services during the last 9 months of fiscal 1980 exceeded all previous records.

The major challenge for the Deaconess in fiscal 1981 will be to manage successfully the impact of the opening of a 200-bed hospital in Burlington by the Lahey Clinic. We anticipate a substantial softening of demand on patient beds during the time period of December 1, 1980 through March or April of 1981. We believe that occupancy figures will return to more acceptable levels by the end of 1981 as a result of the addition of new doctors to the staff and increased utilization of our current staff.

We view fiscal 1981 as a transition year and look forward to more normal levels of patient care activities as well as improved financial results for the 1982 fiscal year.

James F. Morgan
Treasurer

Balance Sheets

September 28, 1980 and
September 30, 1979

Assets

Unrestricted Funds		1980	1979
Current Assets:	Cash and invested cash equivalents:		
	General	$ 1,300,667	$ 2,821,146
	Plant replacement and expansion	4,413,889	2,559,140
	Mortgage payment funds held in trust (Note 3)	1,200,000	450,000
	Accounts receivable—less allowance of $2,205,000 in 1980 and $1,825,000 in 1979 for uncollectible accounts	11,543,537	9,903,527
	Inventories of supplies—at cost	1,102,407	887,264
	Prepaid expenses, etc.	573,136	548,699
	Total current assets	20,133,636	17,169,776
Trustee Designated Funds:	Cash and invested cash equivalents	66,080	31,203
	Investments (market value: 1980, $530,000; 1979, $416,000) (Note 1)	517,727	409,160
	Total trustee designated funds	583,807	440,363
Funds Held in Trust—	(Note 3)	2,006,590	2,139,018
Property, Plant, and Equipment—	Net (Notes 2 and 3)	36,071,202	33,749,405
	Total	$58,795,235	$53,498,562
Restricted Funds			
Special Purpose Funds:	Cash and invested cash equivalents	$ 282,199	$ 302,853
	Investments (market value: 1980, $451,000; 1979, $820,000) (Note 1)	451,542	810,030
	Grants receivable	1,286,340	1,024,535
	Total Special Purpose Funds	$ 2,020,081	$ 2,137,418
Endowment Funds:	Investments (market value: 1980, $5,370,000; 1979, $5,250,000) (Note 1)	$ 5,163,925	$ 5,129,093
	Real estate, equipment, and furnishings—at cost, less accumulated straight-line depreciation: 1980, $1,872,191; 1979, $1,671,994 (Note 4)	3,944,758	3,910,935
	Total Endowment Funds	$ 9,108,683	$ 9,040,028
Plant Replacement and Expansion Funds:	Cash and invested cash equivalents		$ 410,011
	Building Fund pledges receivable	$ 176,804	217,018
	Total Plant Replacement and Expansion Funds	$ 176,804	$ 627,029

See notes to financial statements.

See notes to financial statements.

Liabilities and Fund Balances

Unrestricted Funds		1980	1979
Current Liabilities:	Accounts payable and accrued liabilities	$ 7,166,226	$ 5,621,762
	Accrual for settlements with third-party payors (Note 1)	3,574,902	3,076,659
	Current portion of long-term debt (Note 3)	726,753	450,000
	Deferred nursing school tuition	520,160	529,339
	Advances from third-party payors	425,091	304,909
	Total current liabilities	12,413,132	9,982,669
Deferred Revenue—	Third-party reimbursement (Note 2)	952,600	952,600
Long-Term Debt (Note 3)		13,814,837	14,275,810
Fund Balances		31,614,666	28,287,483
	Total	$58,795,235	$53,498,562
Restricted Funds			
Special Purpose Funds:	Fund balances	$ 2,020,081	$ 2,137,418
	Total Special Purpose Funds	$ 2,020,081	$ 2,137,418
Endowment Funds:	Accounts payable	$ 157,863	$ 214,154
	Mortgage note payable (Note 4)	1,711,727	1,824,415
	Fund balances	7,239,093	7,001,459
	Total Endowment Funds	$ 9,108,683	$ 9,040,028
Plant Replacement and Expansion Funds:	Accounts payable	$ 25,723	
	Fund balances	151,081	$ 627,029
	Total Plant Replacement and Expansion Funds	$ 176,804	$ 627,029

See notes to financial statements.

Statements of Revenues and Expenses

For the Fiscal Years Ended
September 28, 1980 (52 weeks)
and September 30, 1979 (53 weeks)

		1980	1979
Patient Service Revenue		$79,505,751	$69,503,789
Less—	Free care, provision for uncollectible accounts, contractual adjustments, etc.	(13,381,150)	(10,124,573)
Net Patient Service Revenue		66,124,601	59,379,216
Other Operating Revenue	(including $1,542,342 in 1980 and $1,395,567 in 1979 transferred from special purpose funds) (Note 1)	3,161,297	2,765,399
	Total operating revenue	69,285,898	62,144,615
Operating Expenses:	Professional care of patients:		
	General	14,326,025	12,870,792
	Special	26,162,550	23,677,875
	Household and property	5,360,125	4,470,113
	Dietary	4,014,591	3,665,493
	General services and administration	8,903,881	7,968,661
	Employee benefits	5,745,477	5,488,975
	Depreciation (Note 2)	2,185,180	1,897,145
	Research, etc.	1,542,342	1,395,567
	Interest	1,008,168	912,933
	Total operating expenses	69,248,339	62,347,554
Gain (loss) from Operations		37,559	(202,939)
Nonoperating Revenue:	Net income from endowment funds	517,240	518,150
	Unrestricted donations and gifts	152,303	163,308
	Interest, etc.	963,360	906,128
	Gain on extinguishment of debt	60,024	
	Total nonoperating revenue	1,692,927	1,587,586
Excess of Revenues Over Expenses		$ 1,730,486	$ 1,384,647

See notes to financial statements.

Statements of Changes in Fund Balances

For the Fiscal Years Ended
September 28, 1980 (52 weeks) and
September 30, 1979 (53 weeks)

		Unrestricted Funds	Restricted Funds		
			Special Purpose Funds	Endowment Funds	Plant Replacement and Expansion Funds
Balance, September 24, 1978		$26,522,400	$1,678,929	$5,126,878	$ 71,600
Increases (Decreases):	Legacies, gifts, etc. (Note 1)	145,571	219,206	135,864	
	Distribution of funds held in trust (Note 1).			1,711,740	
	Building fund receipts				862,361
	Grants for specified purposes		1,451,449		
	Investment income		90,520		11,136
	Net gain on sales of investment securities		2,365	34,290	
	Excess of revenues over expenses for the year	1,384,647			
	Transfer to other operating revenue		(1,395,567)		
	Total	28,052,618	2,046,902	7,008,772	945,097
Interfund Transfers:	Investment in buildings and equipment	383,424	(750)		(382,674)
	Other	(148,559)	91,266	(7,313)	64,606
Balance, September 30, 1979		$28,287,483	$2,137,418	$7,001,459	$ 627,029
Increases (Decreases):	Legacies, gifts, etc. (Note 1)	193,328	409,672	42,137	
	Building fund receipts				427,621
	Grants for specified purposes		1,479,149		
	Investment income		63,671		
	Net gain on sales of investment securities		3,756	164,054	
	Excess of revenues over expenses for the year	1,730,486			
	Transfer to other operating revenue		(1,542,342)		
	Total	30,211,297	2,551,324	7,207,650	1,054,650
Interfund Transfers:	Investment in buildings and equipment	1,004,864	(54,509)		(950,355)
	Other (Note 7)	398,505	(476,734)	31,443	46,786
Balance, September 28, 1980		$31,614,666	$2,020,081	$7,239,093	$ 151,081

See notes to financial statements.

Statements of Changes in Financial Position of Unrestricted Funds

For the Fiscal Years Ended
September 28, 1980 (52 weeks) and
September 30, 1979 (53 weeks)

		1980	1979
Funds Provided:	Operations:		
	Gain (loss) from operations	$ 37,559	$ (202,939)
	Add operating expenses not requiring current use of funds:		
	Depreciation (includes $107,410 in 1980 and $84,261 in 1979 charged directly to other operating revenue)	2,292,590	1,981,406
	Amortization of bond discount	11,504	11,923
	Funds provided from operations	2,341,653	1,790,390
	Nonoperating revenue—net	1,692,927	1,587,586
	Total funds provided from operations and nonoperating revenue	4,034,580	3,377,976
	Unrestricted legacies	193,328	145,571
	Transfers from Restricted Funds—net	1,403,369	234,865
	Bank loan		760,760
	Proceeds from Series B Revenue Bonds (Note 3)	2,525,000	
	Utilization of funds held in trust for redemption of bonds	279,976	
	Total funds provided	8,436,253	4,519,172
Funds Applied:	Reduction of long-term debt	2,997,477	450,000
	Payments to funds held in trust—net (Note 3)	147,548	240,832
	Additions to property, plant, and equipment	4,614,387	2,762,925
	Increase in trustee designated funds	143,444	76,414
	Total funds applied	7,902,856	3,530,171
Increase in Working Capital		$ 533,397	$ 989,001
Summary of Changes in the Components of Working Capital:	Increase in current assets:		
	Cash and invested cash equivalents	$ 334,270	$ 320,259
	Mortgage payment funds held in trust	750,000	
	Accounts receivable—net	1,640,010	1,138,000
	Inventories of supplies	215,143	326,774
	Prepaid expenses, etc.	24,437	(20,448)
	Total	2,963,860	1,764,585
	Decrease (increase) in current liabilities:		
	Accounts payable, etc.	(1,544,464)	(324,300)
	Accrual for settlements with third-party payors	(498,243)	(444,141)
	Current portion of long-term debt	(276,753)	
	Deferred nursing school tuition	9,179	(61,845)
	Advances from third-party payors	(120,182)	54,702
	Total	(2,430,463)	(775,584)
Increase in Working Capital		$ 533,397	$ 989,001

See notes to financial statements.

Notes to Financial Statements

1. Accounting Policies

General

The accompanying balance sheets of the Hospital are presented in two basic fund accountabilities of unrestricted and restricted funds. Fund balances restricted by outside sources are included in restricted funds and are distinguished from unrestricted fund balances allocated to specific purposes by action of the Board of Trustees (trustee designated funds).

Gifts and grants restricted by outside sources are added to the appropriate restricted funds. Restricted special purpose funds, when expended for current operating purposes, are transferred to unrestricted funds and are reported as other operating revenue.

Prior to 1979, the Hospital was a beneficiary of a non-discretionary trust held by others which was not reported on the accompanying balance sheets. During 1979, the trust's assets were distributed to the Hospital and are included in the accompanying financial statements as an addition to endowment funds in 1979.

It is the consistent policy of the Hospital to consider certain unrestricted legacies received ($193,328 and $145,571 in 1980 and 1979, respectively) as capital resources and to credit such receipts directly to unrestricted fund balances. Generally accepted accounting principles for hospitals, as set forth in the Hospital Audit Guide issued by the Committee on Health Care Institutions of the American Institute of Certified Public Accountants, require the reporting of such amounts as non-operating revenue. Had the aforementioned amounts been reported as non-operating revenue, the Hospital would have reported an excess of revenues over expenses of $1,923,814 in 1980 and $1,530,218 in 1979.

The Hospital's fiscal year ends on the Sunday nearest September 30. Normally, each fiscal year consists of 52 weeks, but every five or six years the fiscal year includes 53 weeks in order to maintain the year end on the Sunday nearest to September 30. The 1980 fiscal year consisted of 52 weeks and the 1979 fiscal year consisted of 53 weeks.

Investments

Investments are stated at cost or, if received by gift or bequest, at fair market value when received. Substantially all of the Hospital's investments are included in an investment pool which is operated on the "market value" method whereby each participating fund is assigned a number of units based on the market value of the assets of the pool at the time of entry of the fund into the pool. Income of the pool is allocated to participating funds based on their respective shares of the pool.

Estimated Settlement with Third-Party Payors

Preliminary calculations of final cost reimbursement adjustments relative to third-party contracts with Blue Cross and Medicare are reported in the accompanying balance sheets as a current liability. Cost reports to be filed for the current year, as well as Blue Cross cost reports filed for 1976, 1977, 1978, and 1979, and the Medicare cost report filed for 1979, are subject to final determination by the reimbursement agency under each program. Variances between preliminary calculations, preliminary settlements, and final settlements are included in the statements of revenues and expenses in the year in which the settlements occur.

Compensated Absences

Effective June 1, 1980, the Hospital changed its sick leave policy so that a portion of accrued sick pay for personnel employed for a period of five or more years is now vested and, under certain conditions, it may be payable at time of termination. The vested sick pay liability as of September 28, 1980, is approximately $375,000.

Reclassifications

Certain 1979 amounts have been reclassified to conform to the 1980 presentation.

Other

Other significant accounting policies are set forth in the financial statements or in the notes which follow.

2. Property, Plant, and Equipment

Property, plant, and equipment of unrestricted funds are stated at cost, including capitalized interest where appropriate, less accumulated depreciation and are summarized as follows:

	1980	1979
Land	$ 640,846	$ 640,846
Buildings	21,812,685	20,688,992
Fixed equipment	21,957,039	20,448,515
Major movable equipment	12,457,722	10,281,307
Construction in progress	73,097	262,134
Total	56,941,389	52,321,794
Less accumulated depreciation	20,870,187	18,572,389
Property, plant, and equipment—net	$ 36,071,202	$ 33,749,405

Depreciation is computed using the straight-line method over the estimated useful lives of depreciable assets. As to certain depreciable assets acquired before 1971, the Hospital uses accelerated depreciation methods to determine reimbursable costs under a third-party reimbursement agreement. Revenue attributable to the excess of accelerated over straight-line depreciation has been deferred and will be added to income when the depreciation timing differences reverse.

3. Long-Term Debt

In 1973, the Massachusetts Health and Educational Facilities Authority (the Authority) sold $14,900,000 principal amount of revenue bonds, designated New England Deaconess Hospital Issue, Series A, and loaned the proceeds therefrom to the Hospital. With certain exceptions, principally the Medical Office Building and Kennedy Hall, all of the Hospital's land and buildings (including contents) are pledged as collateral in connection with the mortgage conveyed by the Hospital to the Authority. The Hospital has also granted to the Authority a first lien on certain defined gross receipts (including related accounts receivable) as additional security for payment of the mortgage.

The mortgage agreement provides for payment, to funds held in trust, of an initial deposit of principal and interest and subsequent monthly payments in amounts proportionate to the Authority's (a) annual principal payments on sinking fund instalments, ranging from $475,000 in 1981 to $525,000 in 2005 and (b) semiannual interest payments at rates varying from 4.9% to 5.7% over the lives of the bonds.

During 1980, the Hospital refinanced an existing bank loan. New financing was obtained from the proceeds of the sale by the Authority of New England Deaconess Hospital, Series B, Revenue Bonds in the amount of $1,800,000, with principal and interest at an annual rate of 8¼% payable monthly through April 1, 1990. The financing is collateralized by a mortgage on the Hospital's 1979 parking garage addition.

The Authority also loaned the Hospital the proceeds from the sale of an additional Series B bond in the amount of $725,000 which is payable in monthly instalments through April 1, 1985 and bears interest at an annual rate of 9%. The proceeds were used to purchase certain equipment which is pledged as collateral.

Long-term debt at year end is summarized as follows:

	1980	1979
New England Deaconess Hospital Issue, Series A	$11,835,000	$12,650,000
Less unamortized discount	175,417	186,922
Net	11,659,583	12,463,078
New England Deaconess Hospital Issue, Series B	2,155,254	
Bank loan		1,812,732
Total long-term debt	$13,814,837	$14,275,810

4. Endowment Funds Mortgage Note Payable

The endowment funds mortgage note bears interest at 5¼% and is payable in monthly instalments through January 1991, including, at September 28, 1980, $129,000 due within one year. The Medical Office Building is assigned as collateral under the terms of this mortgage.

5. Employees' Retirement Plan

The Hospital has a noncontributory defined benefit retirement plan covering all employees working 1,000 hours or more per year. Total pension expense aggregated $1,950,000 in 1980 and $1,800,000 in 1979 including, in both years, amortization over a forty-year

Notes to Financial Statements
(continued)

period of the unfunded actuarially computed past service liability. Such past service liability approximated $7,300,000 as of October 1, 1979. The total pension fund net assets and balance sheet accruals exceeded the actuarially computed value of vested benefits under the plan as of the last plan valuation date, October 1, 1979, by approximately $280,000.

6. Malpractice and Comprehensive Liability Insurance

Effective April 1, 1976, the Hospital changed its malpractice and comprehensive liability insurance coverage from an occurrence basis policy to a claims-made policy. The claims-made policy, which is subject to renewal on an annual basis, covers only claims actually made during the term of the policy, but not those occurrences for which claims may be made after expiration of the policy.

7. Interfund Transfers

During 1980, the Hospital's management and its legal counsel performed a comprehensive review of the terms of certain of its restricted funds. As a result, funds were transferred from special purpose funds to endowment, plant replacement and expansion, and unrestricted funds to more closely reflect the current interpretation of the terms of the original gifts.

8. Lease Information

The Hospital leases certain equipment under operating leases, many of which contain renewal options. Total rental expense on operating leases amounted to approximately $668,000 and $388,000 for 1980 and 1979, respectively.

The Hospital does not have significant capital leases as defined by the Financial Accounting Standards Board's Statement on Accounting for Leases.

Auditors' Opinion

New England Deaconess Hospital:

We have examined the balance sheets of New England Deaconess Hospital as of September 28, 1980 and September 30, 1979 and the related statements of revenues and expenses, changes in fund balances, and changes in financial position of unrestricted funds for the fiscal years (52 and 53 weeks, respectively) then ended. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

It has been the consistent practice of the Hospital to record certain unrestricted legacies received as credits directly to unrestricted fund balances. In our opinion, generally accepted accounting principles require that such legacies be reported as nonoperating revenue. However, as discussed in Note 1, the effect of crediting such legacies directly to unrestricted fund balances does not have a material effect on the results of fiscal 1979 and 1980 operations, changes in fund balances, or changes in the financial position of its unrestricted funds. Accordingly, our present opinion on the 1979 financial statements, as expressed herein, is different from that expressed in our previous report dated November 9, 1979, in which we expressed an opinion that the 1979 financial statements did not present fairly results of operations, changes in fund balances and changes in financial position in conformity with generally accepted accounting principles.

In our opinion, the financial statements referred to above present fairly the financial position of the Hospital at September 28, 1980 and September 30, 1979 and the results of its operations, changes in its fund balances, and changes in the financial position of its unrestricted funds for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

Deloitte Haskins & Sells

Boston, Massachusetts
November 22, 1980

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